

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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U.S. PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte STEVEN C. DAKE and PAUL E. LUSE

Appeal No. 2004-2348  
Application No. 09/469,277

ON BRIEF

Before HAIRSTON, KRASS, and BLANKENSHIP, Administrative Patent Judges.

BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1, 2, 6-10, 16-21, 28, 29, 31, and 32.

We affirm-in-part.

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BACKGROUND

The invention

The invention is directed to an interface between software programs and one or more hardware devices. Claim 1 is reproduced below.

1. A method, comprising:

defining a plurality of hardware devices as a plurality of objects;

providing a plurality of tools to perform a plurality of operations on the plurality of objects;

executing a software program to use the plurality of tools; and

responding to the plurality of operations by the plurality of hardware devices.

Evidence submitted in support of unpatentability

The examiner relies on the following references:

Savitzky et al. (Savitzky)	5,732,261	Mar. 24, 1998
Morris et al. (Morris)	5,877,966	Mar. 2, 1999 (filed Mar. 18, 1996)
Christiansen	5,915,253	Jun. 22, 1999 (filed Dec. 13, 1996)
Brumley et al. (Brumley)	5,926,775	Jul. 20, 1999 (filed Oct. 8, 1997)

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Which claims are rejected?

Background

Our first task in this appeal is to determine which claims are rejected, and why. The examiner submitted an Examiner's Answer (Paper No. 11) that was confused in setting forth which claims were rejected, requiring an administrative remand by this board (Paper No. 14). The examiner mailed a supplemental (i.e., substitute) Answer (Paper No. 15),<sup>1</sup> also confused.

For example, the supplemental Answer, in the "status" of the claims (at 4), does not mention claims 16 or 17 in relation to a § 112 rejection in the Final Rejection (Paper No. 4), nor claims 28 or 30 in relation to a rejection under § 103. Claim 16 is mentioned at page 29 of the supplemental Answer, referring to a nonexistent "previous discussion." Claims 29 and 31-32 are listed as being rejected at the bottom of page 16, and claims 28-32 are listed under the same ground at the top of page 17. However, as appellants note, there appears to be no statement of a prima facie case set forth for claims 28 and 30. The claims do appear to be addressed later, in the responsive arguments section (claim 30 at page 25), and claim 28 is referenced (at 24) in the context of a different ground of rejection.

Appellants filed a reply brief (Paper No. 16) noting some of the problems in the supplemental Answer. Rather than taking the (third) opportunity to clarify the claims

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<sup>1</sup> We refer to the supplemental Answer mailed February 10, 2004 (Paper No. 15), which says "Paper No. 11" on the title page.

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and rejections, the examiner entered the reply brief and passed the application to the board.

Rather than remanding the application for a fourth attempt, we make the following determinations.

Which claims are rejected, and why

Claims 1, 2, 6-10, and 19-21 stand rejected under 35 U.S.C. § 112, first paragraph, as not being enabled.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102 as being anticipated by Savitzky.

Claims 6-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Brumley and Muller.

Claims 16-21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Brumley and Morris.<sup>2</sup>

Claims 28, 29, 31, and 32 stand rejected under 35 U.S.C. § 103 as being unpatentable over Savitzky, Muller, and Christiansen.<sup>3</sup>

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<sup>2</sup> The responsive arguments at page 23 of the supplemental Answer list claims "6-10," but the arguments apply to appellants' position in the Brief with respect to claims 19-21.

<sup>3</sup> Although claim 28 does not appear to be expressly addressed in the statement of the rejection at page 17 of the Answer, depending claim 29 is. We find the Answer sufficient to provide notice to appellants that claim 28 stands rejected under the same ground as claim 29. Moreover, appellants argue claim 28 in the brief.

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The rejection of claims 3-5 and 11-15, set forth in the final rejection, is not being appealed (see page 1 of appellants' brief).

Claims 22-27 have been canceled.

Papers cited

Since the examiner provided a supplemental Answer (Paper No. 15) replacing the first, we will refer to the following papers that we have considered in reaching our further determinations, *infra*: the Final Rejection (Paper No. 4), the Examiner's Answer (Paper No. 15), the Brief (Paper No. 10), and the Reply Brief (Paper No. 16).

OPINION

§ 112, first paragraph rejection

The first paragraph of 35 U.S.C. § 112 requires, *inter alia*, that the specification of a patent enable any person skilled in the art to which it pertains to make and use the claimed invention. Although the statute does not say so, enablement requires that the specification teach those in the art to make and use the invention without 'undue experimentation.' *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). That some experimentation may be required is not fatal; the issue is whether the amount of experimentation required is 'undue.' *Id.* at 736-37, 8 USPQ2d at 1404.

In re Vaeck, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991).

The examiner bears the initial burden of setting forth a reasonable explanation as to why the scope of protection provided by the claims is thought to be not adequately enabled by the description of the invention provided in the specification. If that burden

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is met, the burden then shifts to the applicant to provide proof that the specification is indeed enabling. In re Wright, 999 F.2d 1557, 1561-62, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

We agree with appellants, substantially for the reasons articulated in the Brief, that the initial burden in showing a lack of enablement has not been met. The statement of the rejection (Answer at 5-10) seems to consist of relating claim limitations to the written description and drawings, then alleging that insufficient detail has been provided with respect to how to make and/or use the invention. In § 11 of the Answer (at 26-29), the examiner appears to assert that the specification should contain figures or diagrams setting forth relationships between a respective object and base classes, subclasses, and other objects, and show exemplary source code and data structures.

"Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). The factors to be considered in determining whether a disclosure would require undue experimentation include:

(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Wands, 858 F.2d at 737, 8 USPQ2d at 1404.

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The claims before us appear to be relatively simple and straightforward. The examiner has not provided evidence that one skilled in the art would require the level of detail that the examiner seems to require. "A patent need not teach, and preferably omits, what is well known in the art." Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 1534, 3 USPQ2d 1737, 1743 (Fed. Cir. 1987). "Not every last detail is to be described, else patent specifications would turn into production specifications, which they were never intended to be." In re Gay, 309 F.2d 769, 774, 135 USPQ 311, 316 (CCPA 1962).

We thus do not sustain the rejection of claims 1, 2, 6-10, and 19-21 under 35 U.S.C. § 112, first paragraph, as not being enabled.

Grouping of Claims (prior art rejections)

Consistent with appellants' asserted grouping, arguments presented, and rules in effect at the time of filing of the Brief, we select claims 1, 6, 16, 19, 28, and 29 as representative. See 37 CFR § 1.192(c)(7) (2002).

Prior art rejections

Appellants argue (Brief at 8) that Savitzky fails to anticipate instant claim 1 because it does not disclose "defining a plurality of hardware devices as a plurality of objects."

Savitzky teaches a plurality of software objects describing services for one or a plurality of remote machines. Col. 2, l. 61 - col. 3, l. 4. Savitzky is directed, in particular, to service applications for office machines such as copy machines, facsimile machines, and phone systems. Col. 1, l. 59 - col. 2, l. 9. The reference describes a "component" as a software object that represents the services and state of a remote machine. A component may have sub-components, such as a sorter and a feeder attached to a copier. Col. 3, ll. 59-63. A "machine model" is a collection object, the contents of which describe the services provided by some component. Col. 4, ll. 8-10.

Savitzky depicts a block diagram (Fig. 2) of an object-oriented application framework. The framework includes an application layer 140 consisting of application programs run by the user. The core layer 190 consists of a library of class declarations and implementations that include graphical user interface functions 150, general programming-system functions 160, modeling remote machines 170, and communicating with remote machines 180. The interface layer 260 contains protocol drivers that provide an interface to the communications protocols for communicating with and operating upon remote machines such as copiers 200 and facsimile machines 220. The application programming interface (API) of the classes in the interface layer is defined by abstract classes in the core layer 190, such that an application programmer is insulated from the details of specific interface devices and remote machines. Col. 5, ll. 22-53. Machine Model module 170 describes the services available on remote machines in the form of configurations of objects, called Machine Models, and contain

and organize the information required for an application program to keep track of the current state of the remote machine, and of any operations and data transfers requested by the user. Col. 6, ll. 53-64. Figure 4 depicts a typical component 700, which is an object instance representing a remote machine 90, and the objects to which it refers, including a "state" attribute 600 and a "model" attribute 630. Col. 7, ll. 21-30. A machine model (i.e., model attribute; col. 8, ll. 27-29) may contain, as an example, objects representative of memory in a remote machine. Col. 8, ll. 41-50.

An application program creates a component and its associated machine model and application state in order to communicate with a remote machine. Col. 10, ll. 56-60. To communicate with a facsimile machine or a copier, an application program retrieves a machine model file to allow creation of appropriate component objects, associated machine models, and application states. Col. 11, l. 9 - col. 13, l. 2.

Instant claim 1 recites "defining a plurality of hardware devices as a plurality of objects." The claim is sufficiently broad to read on more than one group of elements in the described embodiments in the reference, as the language does not, for example, limit a device and an object to have a one-to-one correspondence. We find that Savitzky teaches defining a plurality of hardware devices as a plurality of objects at least in the disclosure of defining a copier in terms of associated component, state, and model objects, and a facsimile machine in terms of associated component, state, and model objects.

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Appellants seem to hold to some special or secret definition of "defining" as used in claim 1, but do not point to any special definition set forth in the instant disclosure. In our estimation, the broadest reasonable interpretation of "defining" does not distinguish over creating objects in memory that are representative of the physical devices and which application programs may address, obviating direct communication with the devices, as taught by Savitzky.

We thus sustain the rejection of claims 1 and 2 under 35 U.S.C. § 102 as being anticipated by Savitzky.

We turn to the rejection of representative claim 6, under 35 U.S.C. § 103 as being unpatentable over Brumley and Muller.

Brumley relates to modular software architecture for data acquisition (DAQ) systems. A DAQ system typically includes transducers and other detectors for applications such as measuring physical phenomena or monitoring equipment. Col. 1, II. 19-45. Brumley provides DAQ driver level software that may include a DAQ device object. Col. 3, II. 42-52. The DAQ device object comprises a software object corresponding to the particular device installed in the DAQ system. Each DAQ device installed in the system includes a corresponding DAQ device software object installed in the system. Col. 7, II. 50-65; col. 10, II. 9-24. Each DAQ device object, inter alia, creates mini-driver primitives to control particular hardware resources in the corresponding device. Col. 8, I. 16 - col. 9, I. 10. The mini-driver primitives comprise

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objects which perform the low-level details of configuring or communicating with the DAQ device. Col. 10, ll. 25-34.

As shown in Figure 5 of Brumley, a request may be received from a software program (i.e., user application), which may act upon a plurality of objects based on the request received (i.e., the determined DAQ device object and its associated mini-driver primitives objects). Brumley does not disclose manipulating a redundant array of independent disks modeled by the plurality of objects, but discloses manipulating a DAQ (hardware) device modeled by the relevant plurality of objects.

Appellants argue (Brief at 8) that the other reference in the rejection, Muller, does not disclose a redundant array of independent disks modeled by a plurality of objects. The statement of the rejection (Answer at 13-14) does not point out, with any reasonable specificity, where Muller discloses such. However, in the responsive arguments the examiner seems to rely on column 17, lines 8 through 56 of Muller (Answer at 21).

That section of Muller describes I/O nodes (IONs) 212 that project images of storage resource objects stored on storage disks 224 to the compute nodes 200 (Fig. 2). The storage resource objects appear to relate to data, in view of, for example column 39, line 46 through column 40, line 10, and the claims, of Muller, rather than modeling a redundant array of independent disks. We thus agree with appellants that the rejection fails to show that Muller teaches a redundant array of independent disks modeled by a plurality of objects..

However, Muller does teach hardware and communications relating to a redundant array of independent (RAID) disks (e.g., col. 4, ll. 56-64; col. 5, l. 63 et seq.; col. 23, l. 36 - col. 24, l. 46). The artisan would have recognized that the benefits related to the software architecture taught by Brumley (e.g., col. 2, ll. 14-61) were not limited to the particular hardware devices to which Brumley was directed. We find that the references evidence a relatively high level of skill in the art.<sup>4</sup> The artisan was well versed in application programs and in the requirements of hardware devices from which the application programs may collect data, and would have recognized the benefits in a software architecture (as taught by Brumley) that avoided needless repetition of code when collecting data from different devices.

Suggestion to combine may come from the prior art, as filtered through the knowledge of one skilled in the art. Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1472, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997); see also Cable Elec. Prods., Inc. v. Genmark, Inc., 770 F.2d 1015, 1025, 226 USPQ 881, 886-87 (Fed. Cir. 1985) ("[T]he suggestion to modify the art to produce the claimed invention need not be expressly stated in one or all of the references used to show obviousness. 'Rather, the test is what the combined teachings of the references would have suggested to those of

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<sup>4</sup> See In re GPAC, Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (USPTO board did not err in adopting the approach that the level of skill in the art was best determined by the references of record).

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ordinary skill in the art.'") (quoting In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981)).

In view of the breadth (i.e., lack of specifics) of instant claim 6, we find that the evidence provided by the examiner is sufficient to establish a prima facie case for obviousness. Thus, while we agree with appellants to the extent that Muller by itself does not teach a redundant array of independent disks modeled by a plurality of objects, we consider the combination of Brumley and Muller as suggesting, at the time of invention, the subject matter as a whole of claim 6. We therefore sustain the rejection of claims 6-10 under 35 U.S.C. § 103.

The examiner has not applied Brumley and Muller against instant claims 16 through 21. The examiner submits, instead, Brumley and Morris in a § 103 rejection applied against those claims.

We do not sustain the rejection of claims 16 through 21 over Brumley and Morris, for the reasons expressed by appellants relating to base claim 16. (Brief at 9.) We add that the statement of the rejection (Answer at 15-16) does not point out where Brumley discloses a "plurality of disks."

We sustain the rejection of claims 28 and 29 under 35 U.S.C. § 103 as being unpatentable over Savitzky, Muller, and Christiansen, and thus the rejection of claims 31 and 32 as well. We incorporate our findings with respect to Savitzky (applied against base claim 1) and Muller, supra. Savitzky does not teach that the software architecture is limited to enabling communications with hardware devices such as

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copiers or facsimile machines. The artisan would have appreciated the solutions to the prior art disadvantages set forth at, for example, column 2, lines 24 through 52, and that the disadvantages were not limited to communications with remote office machines. Moreover, the subject matter of the claims appears to be as broad as application of object-oriented programming concepts to the interfacing of applications-level programming to a hardware device, such as a redundant array of independent disks. That object-oriented programming, in which an "object" is an abstraction of a real world entity (Savitzky col. 1, ll. 26-35), facilitated systems design was well known, as further noted in column 1 of Savitzky.

The combined teachings of the references would have suggested subject matter that includes the hardware devices and disk objects set forth in instant claims 28 and 29, establishing at least prima facie obviousness of the subject matter. Christiansen is merely cumulative in the rejection of claims 28, 29, 31, and 32; the reference appears to have been applied only against claim 30 in the Final Rejection (at 33).

We note that the rejection of claim 30 was not repeated in the Answer, but the claim appears to have been rejected in the Final Rejection under § 103. However, nowhere do we find where the examiner has pointed out disclosure or suggestion of "at least one array object" in the Christiansen reference. Although the examiner asserts that Christiansen suggests an "*array of storage objects*" (Answer at 26),<sup>5</sup> an array of

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<sup>5</sup> Christiansen describes objects in a storage system at column 2, lines 11 through 15.

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storage objects is not claimed. A rejection of claim 30 with reliance on Christiansen for teaching “at least one array object” would thus fail.

#### CONCLUSION

The rejection of claims 1, 2, 6-10, and 19-21 under 35 U.S.C. § 112, first paragraph, as not being enabled is reversed.

The rejection of claims 1 and 2 under 35 U.S.C. § 102 as being anticipated by Savitzky is affirmed.

The rejection of claims 6-10 under 35 U.S.C. § 103 as being unpatentable over Brumley and Muller is affirmed.

The rejection of claims 16-21 under 35 U.S.C. § 103 as being unpatentable over Brumley and Morris is reversed.

The rejection of claims 28, 29, 31, and 32 under 35 U.S.C. § 103 as being unpatentable over Savitzky, Muller, and Christiansen is affirmed.

The examiner’s decision in rejecting claims 1, 2, 6-10, 16-21, 28, 29, 31, and 32 is thus affirmed-in-part.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). See 37 CFR § 1.136(a)(1)(iv).

AFFIRMED-IN-PART



KENNETH W. HAIRSTON  
Administrative Patent Judge

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